REMARKS

By the present Amendment, Claims 5-8, 15-18 and 21-24 have been cancelled as being substantially duplicative of the remaining claims in view of the amendments thereto. Claims 1-4, 9-14 and 20 remain in the application. Prior to this Amendment, all of these claims were rejected under §§ 102(b) or 103 as being either anticipated by Eng (U.S. Patent No. 4,310,718) or obvious over Eng in view of Madry (DE No. 36 32 722A1). While these rejections are respectfully traversed, Applicant amended the claims to more particularly recite the structure which differentiates the power cable assembly of the present invention from the cited art.

In rejecting the claims previously submitted with the RCE Request, the Examiner noted that if the Applicant felt that the claimed invention had specific characteristics not found in the prior art and that the prior art references lacked the structure responsible for those characteristics, he should claim the missing structure responsible for those advantageous characteristics. While Applicant believes that he had previously done so, the claims have been further amended so as to clearly recite structure not found in the cited prior art.

A primary feature of Applicant's power cable assembly when used in a water cooled welding apparatus is the avoidance of hydrogen embrittlement of the metallic conductor wires (usually copper) caused by the cooling water passing over the conductor in the cable during use. This is achieved by encapsulating the braided or bunched wires comprising the conductor with a thin coating of plastic

which isolates the wires from the water. This coating also retains any fraying of the wires that may occur due to flexing during use. These features are discussed at length throughout the specification. By making this thin coating or layer of plastic quite thin (about .008-.015 in.), not only does the coating keep the cooling water off the metal wires, thermal insulation of the conducting cable from the cooling effects of the water is avoided thereby providing a more effective dissipation of heat through the coating.

Prior to the present Amendment, the claims each recited that the layer of flexible material "substantially" encased the conductor. The term "substantially" was previously added to the claims to reflect the fact that the end portions of the conductor are secured by metallic fittings and would likely not be encased so as to electrically couple the end fittings to the cable. In rejecting the claims based on the Eng reference, the term "substantially" was used to equate the spacer employed in Eng to the encasing layer claimed by Applicant. While Applicant believes that the meaning of the term "substantially encased" as used in the claims is readily apparent from the specification, the word "substantially" has been deleted from the claims to remove any ambiguity and clearly differentiate the claimed structure from that taught by Eng.

The claims now recite that the layer of flexible material encases the conductor. The specification uses the term encase to mean encapsulate so as to isolate the metal wires forming the conductor from the cooling water to avoid

hydrogen embrittlement of the individual wires. It is quite apparent from a review of the cited Eng patent that the layer of flexible material (5 in Eng) does not encase the conductor as claimed and as described in the application. Eng states that the layer of material 5 is outwardly spaced from conductors 2 so as to form a space 9 inside the ring of the material 5 and that the coolant flows through space 9. In addition, material 5 is specifically described as being a porous textile body so that the coolant can flow through the material between spaces 9 and 10. The coolant in Eng thus flows directly over and about conductors 2 and because of the direct contact of the flowing coolant and the conductors 2, hydrogen embrittlement would result. The flexible material 5 does not isolate the connectors from the coolant in any way. This direct contact is exactly what Applicant's invention is intended to avoid. The claims in the application all now specifically recite that the layer of flexible material encases the conductor. The prior art does not teach or even suggest such an encasement. The prior art merely surrounds the conductor with a porous textile material. Thus, the structures are different as are the results obtained, and the claims recite that structural differences.

The claims also now recite that the projections on the layer of flexible material define a plurality of unobstructured water flow paths extending therebetween and along the conduit. The projections in the Eng patent do not define fluid flow paths, instead, they define ribs that are located between a second

set of conductors 7. Thus, Eng does not teach the unobstructed paths recited in the claims.

Claims 9-14 recite that the projections extending radially from the encasing layer abut the flexible conduct so as to both uniformly space the conduit from the conductor and define the plurality of unobstructed water flow paths extending between the radial projections. The projections in the cited Eng patent do not abut the flexible conduit. Eng teaches the use of a ridge 1a which, as conductors 7 and ribs 6 has "a long pitch helical shape extending longitudinally of the cable" (see col. 2, lines 58-64). The purpose of the ridge 1a is to center the textile body 5 as well as the conductors within hose 1. However, bends in the flexible hose during use combined with the "long pitch" of the spacing ribs 1a would likely cause the outer edge of the ribs on one side of the textile material 5 and the conductors 7 carried therebetween to abut one side of the hose 1 between the revolutions of the "long pitch" helix of rib 1a, possible resulting in uneven cooling and a loss of efficiency. By extending the ends of the radial projections against the outer flexible conduit, the encased conductors will continually remain centrally disposed within the assembly so as to provide even and thus more effective cooling and the cost of additional ribbing on the interior of the outer hose is avoided.

Claims 2, 4, 9, 12, 14 and 20 recite the range of thickness for the layer of flexible material as being about .008-015 in. That layer of flexible material is specifically designed to have a very thin wall thickness such that while it will isolate the conductor wires from the coolant flowing through the cable assembly to prevent hydrogen embrittlement, it is yet sufficiently thin so as to avoid thermally insulating the conductors which would adversely impact the cooling efficiency of the system. Because the Eng patent employs a porous textile material for its inner layer of flexible material and circumscribes a space 9 larger in diameter than the conductor for the passage of cooling fluid therethrough, the thickness of the material 5 is irrelevant. Indeed, while patent drawings are not always drawn to scale, there is certainly nothing in the Eng patent to suggest the thinness recited in these claims. Indeed, the thickness of the individual ribs and circular wall portions of material 5 relative to the individual conductors 7 would suggest a thickness far greater than that recited in those claims.

Finally, the drawings were not approved because Figures 2-4 lacked the proper cross hatching which indicates the type of materials which may be used in the invention. This position is respectfully traversed. Applicant previously submitted amended drawings with the Response to the Office Action mailed on September 9, 2005 which Applicant believes properly illustrates the subject matter of the present invention. It is respectfully requested that the Examiner review the previously submitted replacement drawings. If the Examiner still believes that the

cross hatching is improper, it is respectfully requested that the Examiner contact the undersigned at (213) 896-2510 and explain why so that the problem can be readily cured. Otherwise, the nature of the refusal to approve the drawings is simply not understood as it is believed that the figures in the drawings in this case are properly cross hatched.

In conclusion, we respectfully submit that the claims clearly recite a structure that is neither taught by nor suggested by the cited Eng reference. As explained above, it is the differences in the structures that enables Applicant to achieve the results discussed above and in the application. Further, the differences in the structures are certainly not supplied by the secondary Madry reference. It is therefore respectfully requested that the claims now be allowed and the application passed to issue.

Respectfully submitted,

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